This report, our seventh on the subject since 1967, provides a comprehensive review of the technology and economics of ethylene production by steam cracking. Special attention is given to establishing yield patterns and energy efficiencies that are representative of modern ethylene plant practices. The report reviews and discusses new technologies disclosed in recent patents, technical journals, and technical data on ethylene plant technologies gathered by SRI from process licensors. The economics review covers all the principal feedstocks from ethane to vacuum gas oil. All of the evaluated processes are commercially important.

Capital and production cost estimates to produce ethylene from light feedstocks (ethane, 70 ethane-30 propane, propane, n-butane, and light naphtha) are based on a conventional steam cracking process that uses a modified front-end deethanization product separation sequence recently developed by C.F. Braun.

Similar cost estimates for liquid feedstocks - wide range (W-R) naphtha, atmospheric gas oil (AGO), and vacuum gas oil (VGO) - are based on M.W. Kellogg’s Millisecond® cracking process, followed by a front-end demethanization product separation sequence. For AGO and VGO, the cost estimates are for high severity cracking; for W-R naphtha, the cost estimates are for both high and mild severity crackings plus one case in which a C4 butadiene extraction raffinate stream is recycled to the ethylene cracker.

For those who are in the ethylene business, the report will be useful for its comparative technologies; for those considering entry into the business, it will be useful for its selection of technologies and feedstocks.
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